

# NASA TECH BRIEF

## NASA Headquarters



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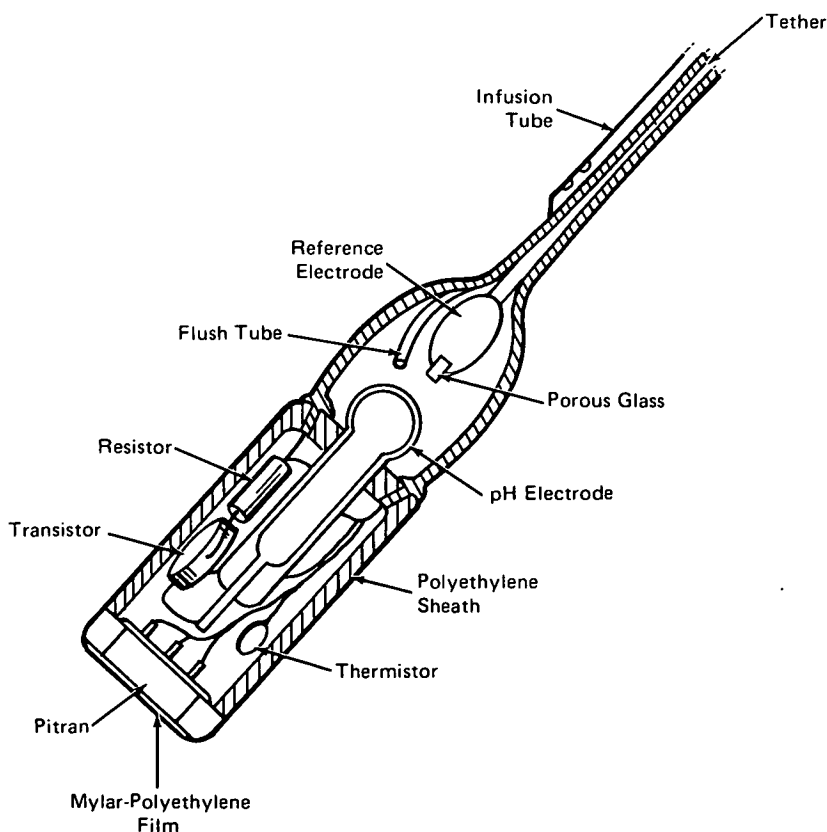
### Sensor Capsule for Diagnosis of Gastric Disorders

#### The problem:

The diagnosis of gastric disorders sometimes requires that measurements be taken inside the stomach for prolonged periods. Devices that perform these measurements must not interfere with the normal digestive functions.

#### How it's done:

The sensor is a capsule which includes a pH electrode, a Pitran pressure transducer, and a thermistor temperature sensor all potted in epoxy and enclosed in a high-density polyethylene sheath, as shown in the figure.



#### The solution:

A pH and motility sensor capsule has been developed to monitor gastric acidity, pressure, and temperature. The capsule does not interfere with digestion.

Inside the capsule is a reference electrode which uses silver silver-chloride wire. This electrode is refillable and contains KCl crystals and water. The entire capsule is approximately 7mm in diameter and 3.2 cm long. It is

(continued overleaf)

connected externally to three polyethylene tubes that serve to carry the seven leads, flush the bulb, and infuse the alkaline solution.

The sensor introduced orally remains in the fixed location inside the stomach. The pH, pressure, and temperature are measured with external instrumentation through the leads that are carried in the tube. Gastric samples can be extracted through infusion tube which is also used for infusion of alkaline solutions as a therapy to raise the pH.

**Notes:**

1. The described device is useful for diagnosis of gastric problems, e.g., ulcers, therapy in case of low pH, and studies of stomach physiology.

2. Requests for further information may be directed to:  
Technology Utilization Officer  
NASA Headquarters  
Code KT  
Washington, D.C. 20546  
Reference: TSP72-10531

**Patent status:**

No patent action is contemplated by NASA.

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